Kansas Department of Health and Environment

Bureau of Environmental Remediation, Remedial Section

State Cooperative Program

Mercury Manometer Program

Background:

Kansas has been a leading natural gas producing state since the early 20th Century. From its inception, the natural gas industry has used mercury manometers extensively to monitor gas pressure and flow at wellheads, gathering systems, facilities, and transmission/distribution lines. Elemental mercury was inadvertently released at a number of these meter stations as a result of maintenance operations, equipment failure, vandalism, and operator error. Given the long, unregulated history of natural gas production in Kansas, KDHE/BER recognized that the number of mercury contaminated stations numbered potentially in the thousands. Research into potential threats to human health indicated that the most immediate health concern was the exposure of workers to mercury vapors. Over a number of years, workers servicing meters could potentially receive significant cumulative exposure from contaminated meter stations.

Solution:

Given the potential magnitude of the problem, KDHE/BER initiated the Mercury Manometer Program in 1993 and charged the State Cooperative Program with management responsibilities. The Mercury Manometer Program evolved into a three phase approach. The first phase, Phase I, was the Site Assessment phase that initiated the process. During Phase I, natural gas companies operating in Kansas were requested to identify all stations where mercury had been or is currently used. Approximately 10,000 stations were assessed and 6,405 of these were identified as sites that used mercury. These sites were characterized through the Site Characterization phase, Phase II, which was conducted under an Agreement between each operator and KDHE. A work plan was developed consistent with KDHE's Scope of Work (SOW) which outlines the sampling strategies for the sites.

Remedial activities at typical meter station.

Most excavation can be done through manual techniques.

Once all the stations have been characterized a final report is submitted to KDHE/BER summarizing the findings. To date, 2,573 sites have been characterized as requiring remediation. These sites are remediated during the Site Remediation phase, Phase III, which is conducted under a Consent Order agreement between each operator and KDHE. Generally, the contaminated soil is excavated and a composite sample is analyzed to determine if the soils are hazardous and to evaluate which remedial technique to employ. A Remediation SOW developed by KDHE outlines four possible remedial strategies including soil treatment that allows treated soils to be returned to the site or off-site disposal of contaminated soils. The extent of the excavation is determined through field screening and verification sampling. A final report is submitted to KDHE/BER and the Consent Order is terminated. By January 2003 only 27 sites remained to be remediated and should be completed in 2003. Additional companies that operate within Kansas have expressed interest in participating in the Mercury Manometer Program to characterize their manometer stations in the future.

Excavated soil placed into soil bags awaiting characterization for disposal.

Benefits:

- **Health risk to workers eliminated.**
- **An estimated 10,000 sites assessed, 6,405 sites identified as potentially impacted through historic use of mercury.**
- **2,573 sites characterized as requiring remediation, 2,546 cleanups completed as of 2002.**
- **Approximately 4,000 cubic yards of soil remediated.**

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